

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty) (PCT Article 36 and Rule 70)

REC'D 13 OCT 2005

WIPO

PCT

Applicant's or agent's file reference 10003615W001	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/JP2004/017039	International filing date (day/month/year) 10.11.2004	Priority date (day/month/year) 21.11.2003
International Patent Classification (IPC) or national classification and IPC Int.Cl. ⁷ H04N5/335, A61B6/00, G01T1/00, 1/20, 1/24, H01L27/14, 31/09, H04N5/32		
Applicant CANON KABUSHIKI KAISHA		

1.	This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.
3.	This report is also accompanied by ANNEXES, comprising: <div style="margin-left: 20px;"> <p>a. <input checked="" type="checkbox"/> a total of <u>8</u> sheets, as follows:</p> <div style="margin-left: 20px;"> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> </div> <p>b. <input type="checkbox"/> a total of (indicate type and number of electronic carrier(s)) _____ containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> </div>
4.	This report contains indications relating to the following items: <div style="margin-left: 20px;"> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p> </div>

Date of submission of the demand 13.07.2005	Date of completion of this report 27.09.2005				
Name and mailing address of the IPEA/JP Japan Patent Office 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">Authorized officer Kenji Tokuda</td> <td style="width: 30%; text-align: center;">5P 9654</td> </tr> <tr> <td colspan="2">Telephone No. +81-3-3581-1101 Ext. 3581</td> </tr> </table>	Authorized officer Kenji Tokuda	5P 9654	Telephone No. +81-3-3581-1101 Ext. 3581	
Authorized officer Kenji Tokuda	5P 9654				
Telephone No. +81-3-3581-1101 Ext. 3581					

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/017039

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-5, 7-38 _____ as originally filed/furnished
- pages* 6, 6/1 _____ received by this Authority on 13.07.2005
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages 42 _____ as originally filed/furnished
- pages* _____ as amended (together with any statement) under Article 19
- pages* 39, 39/1, 40, 40/1, 41, 41/1 _____ received by this Authority on 13.07.2005
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages 1/13-13/13 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/017039

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-14	YES
	Claims		NO
Inventive step (IS)	Claims	1-14	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims		NO

2. Citations and explanations(Rule 70.7)

D1:JP10-93868 A (SONY CORPORATION) 1998.04.10

D2:JP8-256293 A (Fujitsu Limited) 1996.10.01

D3:JP8-116044 A (Canon Kabushiki Kaisha) 1996.05.07

I. No references :claims 1-14

The subject matter of claim 1-14 is neither disclosed in any of the cited documents D1,D2 and D3 nor obvious to a person skilled in the art.

high-performance radiation image pick-up device and a method therefor, and an inexpensive and high-performance radiation image pick-up system which are capable of freely switching sensitivity over to
5 another one in correspondence to a situation and an object of the image photographing to flexibly cope therewith, i.e., capable of carrying out both still image photographing and moving image photographing for example which are largely different from each
10 other in dosage of exposure to radiation and which are also different in required sensitivity so as to meet that request.

A radiation image pick-up device of the present invention includes: a plurality of pixels disposed in
15 matrix, each of the pixels including at least one photoelectric conversion element for converting incident radiation into electric charges; and a signal output circuit for outputting signals from the pixels, in which a plurality of signal reading
20 wirings through which the pixel and the signal output circuit are connected to each other are provided for each pixel, and in which each of the pixels includes semiconductor elements connected to each of the signal reading wirings, and each of the signal
25 reading wirings is selectable based on an actuation of the semiconductor element.

In further aspect of the radiation image pick-

up device of the present invention, the photoelectric conversion element includes a wavelength conversion member for performing wavelength conversion on incident radiation.

BEST AVAILABLE COPY

IPEA/JP 13.7.2005

CLAIMS

1. (Amended) A radiation image pick-up device comprising: a plurality of pixels disposed in matrix, each of the pixels including at least one
5 photoelectric conversion element for converting incident radiation into electric charges; and a signal output circuit for outputting signals from the pixels, the radiation image pick-up device being characterized in that:

10 a plurality of signal reading wirings through which the pixel and the signal output circuit are connected to each other are provided for each pixel, and

in that each of the pixels includes
15 semiconductor elements connected to each of the signal reading wirings, and each of the signal reading wirings is selectable based on an actuation of the semiconductor element.

20 2. A radiation image pick-up device according to claim 1, characterized in that the photoelectric conversion element includes a wavelength conversion member for performing wavelength conversion on incident radiation.

25

3. (Amended) A radiation image pick-up device according to claim 1, characterized in that the

signal reading wirings is freely selectable based on the actuation of the semiconductor elements according to a dosage of the radiation.

- 5 4. A radiation image pick-up device according to claim 3, characterized in that at least one of the

semiconductor elements is a source follower.

5. A radiation image pick-up device according to claim 1, characterized in that a signal reading
5 circuit for reading out a signal from the pixel is provided to each of the signal reading wirings.

6. A radiation image pick-up device according to claim 1, characterized in that a signal reading
10 circuit for reading out a signal from the pixel is provided in common to the signal reading wirings.

7. A radiation image pick-up device according to claim 1, characterized in that the two signal reading
15 circuits are provided.

8. (Amended) A radiation image pick-up method comprising:

using a device which includes: a plurality of
20 pixels disposed in matrix, each of the pixels including at least one photoelectric conversion element for converting incident radiation into electric charges; and a signal output circuit for outputting signals from the pixels, the radiation
25 image pick-up method being characterized in that:

said device includes respectively semiconductor element connected to each of the signal reading

wirings

the semiconductor device is operated such that
any one of a plurality of signal reading wirings
which are provided for each pixel and through which
5 the corresponding pixel and the signal output

circuit are connected to each other is selected and used in correspondence to a photographing mode to be used.

5 9. A radiation image pick-up method according to claim 8, characterized in that the photoelectric conversion element performs wavelength conversion on incident radiation, and converts the conversion results into electric charges.

10 10. (Amended) A radiation image pick-up method according to claim 8, characterized in that the semiconductor device is operated such that any one of the plurality of signal reading wirings is selected
15 in correspondence to magnitude of a dosage of radiation.

20 11. A radiation image pick-up method according to claim 9, characterized in that each of the pixels includes semiconductor elements connected to the plurality of signal reading wirings, and at least one of the semiconductor elements is a source follower, and when in case of the photographing mode involving a low dosage of radiation, the signal reading wiring
25 having the source follower is selected.

12. A radiation image pick-up system,

BEST AVAILABLE COPY

characterized by comprising:

a radiation image pick-up device as claimed in
claim 1;